

Please add the following new claims:

123. (New) A method of producing a foamed material, said method comprising:

contacting a mixture comprising a first thermoplastic polymer and a second thermoplastic polymer with a blowing agent, wherein the first thermoplastic polymer has a higher percent crystallinity than the second thermoplastic polymer; and

subjecting the mixture to conditions sufficient to create a thermodynamic instability in the mixture to foam the mixture, the mixture comprising the first and second thermoplastic polymers having a percent crystallinity lower than the first thermoplastic polymer;

wherein the foamed material formed by said method has a plurality of distinct void spaces formed therein having an average size ranging from above about 0 to about 100 microns.

124. (New) The method according to Claim 123, wherein the blowing agent is carbon dioxide.

125. (New) The method according to Claim 124, wherein the carbon dioxide is liquid carbon dioxide.

126. (New) The method according to Claim 124, wherein the carbon dioxide is supercritical carbon dioxide.

127. (New) The method according to Claim 123, wherein at least one of the first and second thermoplastic materials is amorphous.

128. (New) The method according to Claim 127, wherein the mixture of thermoplastic materials is amorphous.

129. (New) The method according to Claim 123, wherein at least one of the first and second thermoplastic materials is semicrystalline.

130. (New) The method according to Claim 123, wherein the first thermoplastic polymer is semicrystalline and the second thermoplastic material is amorphous.

131. (New) The method according to Claim 130, wherein the mixture of thermoplastic materials is amorphous.

132. (New) The method according to Claim 123, wherein the first and second thermoplastic polymers are each independently selected from the group consisting of PVDF, sPS, PTFE, PVC, Nylon (6,6), polyvinylmethylether, PP, PE, HDPE, PS, PMMA, polyisobutylene, PVA, PDMS, PEO, poly(phenylene oxide), PVF, PVDC, PVC, PVOH, PVAc, PC, ethyl acetate, PET, poly(ethylene naphthalate), poly(ϵ -caprolactone), poly(ether imide), chemical derivatives thereof, and mixtures thereof.

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133. (New) The method according to Claim 123, wherein the first thermoplastic polymer is selected from the group consisting of PVDF, sPS, PTFE, PVC, Nylon (6,6), polyvinylmethylether, PP, PE, HDPE, PVF, PVDC, PVOH, PVAc, PC, ethyl acetate, PET, poly(ethylene naphthalate), poly(ϵ -caprolactone), poly(ether imide), chemical derivatives thereof, and mixtures thereof; and the second thermoplastic polymer is selected from the group consisting of PS, PMMA, polyisobutylene, PVA, PDMS, PEO, poly(phenylene oxide), PC, chemical derivatives thereof, and mixtures thereof.

134. (New) The method according to Claim 123, wherein the first thermoplastic polymer is PVDF and the second thermoplastic polymer is PMMA.

135. (New) The method according to Claim 123, wherein said subjecting step comprises separating the mixture from the blowing agent to foam the mixture.

136. (New) The method according to Claim 135, wherein said step of separating the mixture comprises venting the blowing agent.

137. (New) The method according to Claim 123, wherein the blowing agent further includes a co-solvent.

138. (New) The method according to Claim 123, wherein the blowing agent further includes a modifier selected from the group consisting of a reactant modifier, water, a plasticizing agent, an anti-bacterial agent, a toughening agent, a processing aid, a colorant, a dye, a flame retardant, and mixtures thereof.

139. (New) The method according to Claim 123, wherein the blowing agent is selected from the group consisting of inorganic agents, organic blowing agents, and chemical blowing agents.

140. (New) The method according to Claim 139, wherein the blowing agent is an inorganic blowing agent selected from the group consisting of carbon dioxide, nitrogen, argon, water, air nitrogen, and helium.

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141. (New) The method according to Claim 139, wherein the blowing agent is an organic blowing agent selected from the group consisting of aliphatic hydrocarbons having 1-9 carbon atoms, aliphatic alcohols having 1-3 carbon atoms, and fully and partially halogenated aliphatic hydrocarbons having 1-4 carbon atoms.

142. (New) The method according to Claim 139, wherein the blowing agent is a chemical blowing agent selected from the group consisting of azodicarbonamide, azodiisobutyronitrile, benzenesulfonhydrazide, 4,4-oxybenzene sulfonylsemicarbazide, p-toluene sulfonyl semicarbazide, barium azodicarboxylate, N,N'-dimethyl-N,N'-dinitrosoterephthalamide, and trihydrazino triazine.

143. (New) A method of producing a foamed material, said method comprising:
contacting a mixture comprising a first thermoplastic polymer and a second thermoplastic polymer with a blowing agent, wherein the first thermoplastic polymer has a higher percent crystallinity than the second thermoplastic polymer, and wherein the mixture of thermoplastic materials is amorphous; and

subjecting the mixture to conditions sufficient to create a thermodynamic instability in the mixture to foam the mixture, wherein the foamed material formed by said method has a

plurality of distinct void spaces formed therein having an average size ranging from above about 0.1 to about 50 microns.

144. (New) The method according to Claim 143, wherein the first thermoplastic polymer is PVDF and the second thermoplastic polymer is PMMA.

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145. (New) A method of producing a foamed material, said method comprising:
contacting a mixture of thermoplastic polymers consisting essentially of PVDF and PMMA, wherein the mixture of thermoplastic materials is amorphous; and
subjecting the mixture to conditions sufficient to create a thermodynamic instability in the mixture to foam the mixture, wherein the foamed material formed by said method has a plurality of distinct void spaces formed therein having an average size ranging from about 0.1 to about 50 microns.

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146. (New) A method of extrusion processing a mixture of thermoplastic materials, said process comprising:

introducing at least two thermoplastic polymers into an extruder barrel, the at least two thermoplastic polymers comprising a first thermoplastic polymer and a second thermoplastic polymer, wherein the first thermoplastic polymer has a higher percent crystallinity than the second thermoplastic polymer, and wherein the mixture of thermoplastic materials is amorphous;

heating the mixture of thermoplastic materials to provide a molten blend thereof;
contacting the molten blend of thermoplastic materials with a blowing agent; and
subjecting the blend to conditions sufficient to create a thermodynamic instability in the blend to foam the blend, wherein the foamed blend has a percent crystallinity lower than the first thermoplastic polymer;

wherein the foamed material formed by said method has a plurality of distinct void spaces formed therein having an average size ranging from about 0.1 to about 50 microns.

147. (New) The method according to Claim 146, wherein the first thermoplastic polymer is PVDF and the second thermoplastic polymer is PMMA.

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148. (New) A method of extrusion processing a mixture of thermoplastic materials, said process comprising:

introducing a mixture of thermoplastic polymers consisting essentially of PVDF and PMMA into an extruder barrel, wherein the mixture of thermoplastic materials is amorphous; heating the mixture of thermoplastic materials to provide a molten blend thereof; contacting the molten blend of thermoplastic materials with a blowing agent; and subjecting the blend to conditions sufficient to create a thermodynamic instability in the blend to foam the blend, wherein the foamed blend has a percent crystallinity lower than the first thermoplastic polymer;

wherein the foamed material formed by said method has a plurality of distinct void spaces formed therein having an average size ranging from about 0.1 to about 50 microns.

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149. (New) A method of producing a foamed material, said method comprising: contacting a mixture comprising a first thermoplastic polymer and a second thermoplastic polymer with a blowing agent comprising a surfactant, wherein the surfactant is a copolymer selected from the group consisting of a graft copolymer, a block copolymer, and a random copolymer, wherein the first thermoplastic polymer has a higher percent crystallinity than the second thermoplastic polymer; and

subjecting the mixture to conditions sufficient to create a thermodynamic instability in the mixture to foam the mixture, the mixture comprising the first and second thermoplastic polymers having a percent crystallinity lower than the first thermoplastic polymer;

wherein the foamed material formed by said method has a plurality of distinct void spaces formed therein having an average size ranging from about 0 to about 500 microns.

150. (New) The method according to Claim 149, wherein the plurality of distinct void spaces formed therein have an average size ranging from about 1 to about 100 microns.

151. (New) The method according to Claim 149, wherein the plurality of distinct void spaces formed therein have an average size ranging from about 0.1 to about 50 microns.

152. (New) The method according to Claim 151, wherein the mixture of thermoplastic materials is amorphous.

153. (New) The method according to Claim 152, wherein the first thermoplastic material is PVDF and the second thermoplastic material is PMMA.

154. (New) A method of extrusion processing a mixture of thermoplastic materials, said process comprising:

introducing at least two thermoplastic polymers into an extruder barrel, the at least two thermoplastic polymers comprising a first thermoplastic polymer and a second thermoplastic polymer, and wherein the first thermoplastic polymer has a higher percent crystallinity than the second thermoplastic polymer;

heating the mixture of thermoplastic materials to provide a molten blend thereof;
contacting the molten blend of thermoplastic materials with a blowing agent comprising at least one surfactant, wherein the surfactant is a copolymer selected from the group consisting of a graft copolymer; and

subjecting the blend to conditions sufficient to create a thermodynamic instability in the blend to foam the blend, wherein the foamed blend has a percent crystallinity lower than the first thermoplastic polymer;

wherein the foamed material formed by said method has a plurality of distinct void spaces formed therein having an average size ranging from above about 0 to about 500 microns.

155. (New) The method according to Claim 154, wherein the plurality of distinct void spaces formed therein have an average size ranging from about 1 to about 100 microns.

156. (New) The method according to Claim 154, wherein the plurality of distinct void spaces formed therein have an average size ranging from about 0.1 to about 50 microns.

157. (New) The method according to Claim 156, wherein the blend of thermoplastic materials is amorphous.

158. (New) The method according to Claim 157, wherein the first thermoplastic material is PVDF and the second thermoplastic material is PMMA.